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Identifying residents' educational needs to optimising postgraduate medical education about shared decision-making

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ABSTRACT

Objective: To investigate how to optimise resident engagement during workplace learning of shared decision-making (SDM) by understanding their educational needs.
Methods: A qualitative multicentre study was conducted using video-stimulated interviews with 17 residents in General Practice. Video recordings of residents' recent clinical encounters were used to facilitate reflection on their educational needs.
Results: Data analysis resulted in five themes regarding residents' educational needs for learning SDM: acquiring knowledge and skills needed to perform SDM; practising SDM; reflection and feedback; longitudinal and integrated training; and awareness and motivation for performing SDM.
Conclusion: Residents expressed a need for continuous attention to be paid to SDM during postgraduate medical education. That would help them engage in two parallel learning processes: acquiring the knowledge and skills necessary to perform SDM, and practising SDM in the clinical workplace. Alignment between the educational curriculum, workplace learning and resident learning activities is essential to operationalise SDM attitude, knowledge and skills into clinical performance.
Practice Implications: The identified educational needs provide ingredients for fostering the development of SDM proficiency. The findings suggest that residents and clinical supervisors need parallel training to bridge the gap between education and clinical practice when learning SDM.

1. Introduction

Shared decision-making (SDM) is considered fundamental to patient-centred care since this approach encourages decisions that are consistent with patients' values and preferences [1–4]. Although clinicians and patients recognise the potential benefits [5,6], implementation of SDM in clinical practice is still limited [7,8].

There has been a growing emphasis on the need for training to support the implementation of SDM. This has resulted in numerous SDM training programmes [9,10]. Although training is considered a precondition for successful engagement with SDM in clinical practice, the effectiveness of these programmes is still limited [9–11]. This may reflect a transfer gap between acquiring SDM knowledge and skills, and subsequently translating them into clinical performance.

This transfer gap may be explained by SDM being a competence which requires integration of medical expertise and clinicians' perspectives, communication, clinical guidelines and patient preferences [2,12–14]. This complexity is illustrated by the challenges faced when learning and applying SDM. These may include doubts about the benefits of SDM, discomfort with losing decision-making power, assumptions about patients preferring paternalism, or believing that they already involve patients [8,15,16]. Furthermore, clinicians' SDM

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behaviour is influenced by contextual factors such as decision difficulty, the pre-existing relationship with the patient, time constraints and perceived lack of self-efficacy [17].

Becoming proficient in an integrated competence requires longitudinal and applied learning [18,19]. Therefore, the workplace is an ideal setting for learning SDM because it provides an authentic environment with impactful experiences and challenging situations [19–22]. Yet, most SDM training programmes are stand-alone interventions with minimal recognition of the need for applied learning [9,11,23]. We therefore expect that longitudinal workplace learning is necessary to bridge the gap between training and clinical practice and supports sustainable implementation of SDM.

Postgraduate medical education is a suitable period to learn SDM, given the focus on acquiring integrated competence in authentic clinical settings [11,24]. Understanding learners' perceptions about their educational needs regarding SDM (defined in Appendix A) is a precondition for workplace learning, since educational activities that are in line with learners' expectations and objectives foster their intrinsic motivation for learning [25–27]. The aim of this study was to understand how to optimise resident engagement during workplace learning of SDM, by exploring their educational needs.

2. Methods

2.1. Study design

We conducted a qualitative multicentre study using video-stimulated interviews with General Practice (GP) residents. We chose residents in this specialty because acquiring integrated competences in clinical practice is a core component of their training. We used video recordings of consultations between residents and their patients to link reflection on SDM performance and identification of educational needs to residents' personal authentic learning experiences. Video-stimulated interviews have proven useful when studying doctor-patient interactions [28–31].

2.2. Setting

This study was conducted in practices affiliated with Dutch GP training institutes in Maastricht, Amsterdam, Nijmegen and Leiden. Traditionally, general practice is characterised by generalist, person-centred and continuous care. In the Netherlands, SDM is part of these core values [32,33]. Dutch GP specialty training lasts three years, including GP placements in the first and third years and clinical placements in the second year [34]. In general practice, a GP supervisor oversees the resident's competence development. Regular learning conversations are scheduled (e.g., to reflect on behaviours while observing (recorded) consultations, to receive feedback on performance and to identify learning questions). Workplace learning is blended with a weekly formal training day in small-group sessions. In the formal curriculum, SDM training is mainly integrated in communication education, with a focus on providing theory and practising skills in often infrequently scheduled sessions throughout training.

2.3. Participants

We sought diversity in residents with respect to training year and institute, to include various levels of clinical experience and training in SDM. After gaining consent of curriculum coordinators and teachers, we approached 150 first- and third-year GP residents at the four training institutes following a convenience sampling technique [35]. We informed them about the study aims and procedure during a training day at the institute. Those interested in participation received an information letter. Residents knew that we were studying SDM. Participating residents received a €25 gift card as compensation.

Patients received oral and written information from a researcher in the waiting room of the general practice. If the patient was under 18, the accompanying parent(s) were informed. Participating patients received no compensation.

2.4. Data collection

Data collection took place between August 2017 and May 2019. A trained researcher visited the resident during a morning or afternoon clinic. This researcher was not involved in the resident's GP training programme. The researcher was present to record and observe the consultations and take field notes about the atmosphere, (non)verbal communication and notable events related to SDM, as input for the subsequent interview. After each consultation, the resident filled in a questionnaire measuring context of the consultation – (un)known patient, emergency consultation, initial or follow-up consultation – reason for encounter and the decision discussed. Both the residents and patients filled in demographic characteristics and scored the relevance of SDM to this consultation on a 6-point scale (completely disagree – completely agree).

The researcher interviewed the resident directly after the observation or during the next training day. The researcher used an interview guide (Appendix B) [28,30]. First, the resident was invited to select one recorded consultation according to their personal need for reflection (an exemplary learning experience) [30]. If the resident expressed no preference, the consultation was selected by mutual agreement, based on the resident's SDM relevance scores and the field-notes. Then the researcher explored the perceived medical goals of the consultations, relevant contextual factors and motivation for the resident's SDM relevance score.

Next, the resident and the researcher watched the recorded consultation. The resident was encouraged to pause the video when they felt they (should have) applied SDM, and to reflect on their thoughts, feelings and behaviours. The researcher could also pause the video at a moment considered important by the researcher to ask the resident to elaborate on motives for their behaviour (e.g., what were you trying to achieve at this moment?). The researcher prompted the resident to reflect on educational needs related to SDM (e.g., how did you learn this, what do you need to learn this?). Finally, we used an iterative process of data collection and analysis to refine the focus in subsequent interviews.

2.5. Data analysis

The audio-recorded interviews were transcribed verbatim. The actual interactions in the video fragments used as input were summarised and integrated in the transcripts to provide contextual information for the analysis. We used NVivo 11 Pro software to support the qualitative data analysis [36]. We performed the framework method of thematic analysis [37,38]. Following an inductive approach, we used open coding to identify and summarise information from the transcripts. Codes were grouped into potential themes and subthemes, which were revised and refined going back and forth between the transcripts and the developed codes [37,38]. During this entire process, memo writing was used to guide the interpretation of themes.

The transcripts were coded independently by at least two researchers with backgrounds in medicine (AB/ES/FE/DR), health sciences (EG) or psychology (AT). Then, the codes were compared and discrepancies

were discussed until consensus was reached. The research team reviewed and discussed potential (sub)themes after the analysis of the first five interviews and again after ten interviews to reflect on the structure of and connections between themes. We used a mapping approach to visualise relationships between themes. This informed interpretations of the study outcomes, with learning SDM as the central concept [37].

2.6. Ethical approval and informed consent

The Ethics Committee of the Dutch Association for Medical Education (NVMO) approved this study (file no. 894). Participating residents and patients gave written informed consent. GP supervisors gave permission to visit the practices.

3. Results

3.1. Demographic characteristics

Seventeen GP residents agreed to volunteer (Table 1): 10 first-year and seven third-year residents. Their mean age was 30 years and 15 of the 17 residents were female. All residents had prior clinical experience before entering GP specialty training.

From the 108 consultations scheduled, 80 patients agreed to participate. Four patients were no-shows, and 24 patients did not consent to the consultation being recorded, referring to needing privacy or feeling tense. Consultation characteristics are described in Appendix C.

Of the 17 interviews, nine took place on the day of the consultation. Due to the residents' busy schedules, the remaining eight interviews were conducted within three weeks, five of which occurred in the first week. The interviews lasted 40–68 min. After analysing 10 interviews, saturation was reached on the main themes emerging from the data. After coding all interviews, we had obtained a rich and meaningful understanding of these themes to enable answering the research question.

3.2. Results of the interviews

We identified residents' educational needs for workplace learning about SDM across four themes that are connected in learning SDM: (1) acquiring knowledge and skills needed to perform SDM, (2) practising SDM, (3) reflection and feedback, (4) longitudinal and integrated training. We also identified an additional theme 'awareness and

Table 1
Characteristics of the GP residents, number of video-recorded consultations per resident and duration of interviews.

Characteristics of residents (n = 17)	
Age (mean in years [range])	30 [25–35]
Female (n (%))	15 (88)
GP training year (n (%))	
First year	10 (59)
Third year	7 (41)
Clinical experience before entering GP training (mean in months [range])	29[6–52]
General practice type (n (%))	
Urban	14 (82)
Rural	3 (18)
Location of GP training institute (n (%))	
Maastricht	6 (35)
Amsterdam	5 (29)
Nijmegen	3 (18)
Leiden	3 (18)
Video-recorded consultations per resident (mean [range])	4.7[3–8]
Duration of interview (mean in minutes [range])	53 [40–68]

Abbreviation: GP = General Practice

Table 2
Quotes from video-stimulated interviews with residents about their educational needs for learning shared decision-making.

Theme 1: Acquiring knowledge and skills needed to perform SDM	
Q1	'I don't really feel like I have a sound structure for it in my head yet. It's not like "OK, I'm going to use SDM now. First, I have to do step one, and then this and this…". Because I really feel like I haven't had much education about it yet.' (Resident 9)
Q2	'It's hard for me to recognise a medical decision. When does it feel like a situation where the patient can participate in the decision? (…) It feels like I haven't found my way yet. When can I properly predict an SDM situation? And what is considered SDM and what is not? I have trouble recognising those situations.' (Resident 6)
Q3	'So I often think to myself: "What are the options really, and are there options?" I just find that difficult; that's my own uncertainty.' (Resident 3)
Q4	'If she wanted to go to the dermatologist, I would have sent her. If she wanted a stronger ointment, I would have given her that. It depended very much on what she wanted. (…) The context factor is that I'd never actually treated psoriasis before. (…) Yeah, I just don't have much experience with it, so it's quite difficult to be on top of it.' (Resident 14)
Q5	'If I know right away, "OK, this is it", if I have a clear diagnosis (…) then often I know the possible treatments and I can present them to the patient with confidence. Then I feel more comfortable discussing it with the patient, and if necessary, I can swing to the left or the right. But if I'm not sure what the problem is, I feel more uncertain about it and I want to do some research first.' (Resident 4)
Q6	'Clarification of the patient's preferences and considerations: what I see in this consultation is that I'm taking it a bit easy with that. I look at her and think "Is she nodding, is she satisfied, is she going to go along with that?" instead of saying "What do you think about that?" or really giving the patient space for that.' (Resident 17)
Theme 2: Practising SDM	
Q7	'So here, in practice, that's what I learn from instead of learning from the book or the formal training days.' (Resident 10)
Q8	'Videos are really a good incentive because when you're recording videos I start to exaggerate it [SDM] a bit. Now that you [the researcher] are here, I also exaggerate it a bit. And I hope that in this way it will become so ingrained that I'll do it in any case. Yes, even in more hasty consultations.' (Resident 14)
Q9	'I think that if you really see it in practice – not just talk afterwards about how I did that with a patient – if you also see your supervisor doing it, you get a lot of valuable things out of it. I find observation sessions in particular very instructive. And especially in the GP's own practice (…) those are certainly very valuable and I would like to see more of them.' (Resident 3)
Q10	'That you just practise it in a group: you have a kind of dialogue, you have to try it and others help you. That kind of roleplaying.' (Resident 2)
Q11	'Having example sentences of how you can implement SDM in your consultation (…) Having to really look at that moment: could I apply this or that sentence, and writing it down and having it next to you, for example.' (Resident 1)
Q12	'Now we have SDM as an emphasis for me, so we've been paying a bit more attention to that in the past month and will in the near future. For instance, we [resident and supervisor] watch a video together and then pay particular attention to that.' (Resident 14)
Q13	'When you discuss a case with your supervisor, you might have thought of two options. And then they reply, "Yes, but there is also an option three and an option four".' (Resident 2)
Theme 3: Reflection and feedback	
Q14	'Looking back at this consultation, I really think "Gosh, I am not applying SDM". That helps with awareness, seeing what you're really doing. And when you're actually doing it, you're less aware of that. So I definitely think that watching the consultations already helps.' (Resident 16)
Q15	'If you want really good feedback, you have to do it face-to-face and not just watch a video, send it in and get an assessment back. Hear both sides. It's actually interesting to know why someone does or doesn't apply SDM (…) That can happen in a group, with your teacher at the institute, and certainly also with your GP supervisor.' (Resident 12)
Q16	'You mustn't record with the aim of discussing SDM, because then you're going to have a different conversation anyway. In fact, you should choose something as neutrally as possible, randomly, like this is from last week and I'll show it to you.' (Resident 7)
Q17	'Then I talked about this [SDM] in the group (…) my experience and how it had gone. Then a peer gave her opinion and said: "You could also have said…". And then I thought, "Oh well, I could have phrased it that way too" (…) So what helps me in that? I think that's just asking colleagues: "How do you do that?" And talking about your own experiences. Because that's something we perhaps don't do often enough: discussing our SDM

(continued on next page)

Table 2 (*continued*)

Theme 1: Acquiring knowledge and skills needed to perform SDM	
	experiences with each other and discussing how we would approach it.' (Resident 6)
Q18	'In the first year, the MAAS-Global [Dutch validated assessment instrument for doctor-patient communication] is obviously a big deal because you have to score high on it. So you turn in your very best video, and it's nice if you score well. But of course you have many consultations that don't run smoothly, where something goes wrong with SDM (…) You learn much more from those consultations than if you simply have to hand in a very good one.' (Resident 15)
Theme 4: Longitudinal and integrated training	
Q19	'It's really important that this is refreshed; I think repetition is important. But yeah, that's difficult because the programme is already so full. However, you could have it come back in other parts of the programme. For instance, if you're talking about diabetes and the annual monitoring for that, you could think about what you could do there with SDM. That sort of thing.' (Resident 3)
Q20	'Perhaps it would be beneficial if a bit more attention was paid to this right away, to the whole picture, where we want to get in the end. Yes, before you start picking up all kinds of things. And the sooner you start doing that, the sooner you find out how useful it is when patients have a say.' (Resident 12)
Q21	'The second half of the year you think, "Hey, now I have a bit more room for that in my head, because I have a few tools to do the initial phase of the consultation". And now with a bit more knowledge, a bit more experience, you can get a bit more involved with this.' (Resident 5)
Theme 5: Raising awareness and motivation for performing SDM	
Q22	'It takes so much time with people who have language barriers and the like. In the end, I feel that it doesn't do much good because they don't quite understand, or they say "I want to hear your opinion", and that's what I want to do. They actually ask for a more paternalistic approach. And when it [SDM] takes so much time and your clinic hours are running late, I can imagine that you're more inclined not to do it.' (Resident 16)
Q23	'There's still a part of me that thinks I know what's best for the patient (…) I only spend time on it [SDM] if I feel that the patient has doubts about my choice, or if I've already noticed that they are not following my therapy or something (…) So I'm not the biggest Shared Decision Maker.' (Resident 1)
Q24	'I can start listing all the diagnostics we can do and say that. Then they'll take the bait and bet on it while I think it's nonsense. Maybe it's better not to mention it or discuss it, or just do so quickly and steer them the other way. I know that… Obviously, it doesn't quite fit with SDM, but yes, that's what you do in practice.' (Resident 5)
Q25	'Sometimes you come to a decision that makes you think: "Well, as a doctor I don't really agree with it, but okay." Then you make some concessions (…) Otherwise, you won't get anywhere with the patient (…) So there's a little give and take. It's not always what the doctor wants, because fortunately it doesn't work that way anymore.' (Resident 13)
Q26	'I think this [SDM] is much more about bigger decisions: to operate or not, to have someone admitted, or to really start a lifestyle change or medication. Then it's about bigger things and it's good to do this.' (Resident 8)
Q27	'They're used to a doctor who is a bit paternalistic, who says: "Well, we're going to do it like this". And then they're fine with it. If you tell them that it will be better, well then we'll do it, won't we? So it doesn't always lead to a negative experience for me; sometimes you get a bit of confirmation.' (Resident 5)
Q28	'I don't think he [the supervisor] sees much point in this [SDM]… He doesn't use it himself, so he doesn't have much experience with it and he many not be able to give many tips. Of course it might help, but it's more useful if your supervisor agrees that it's good to make decisions together.' (Resident 16)

Abbreviations: SDM = shared decision-making; Q = quote

motivation for performing SDM'. Each theme is discussed in the following paragraphs, underpinned with interview quotes (Table 2).

3.2.1. *Acquiring knowledge and skills needed to perform SDM*

The residents emphasised the need to obtain knowledge and skills enable translation of the concept of SDM into concrete actions in clinical practice. They expressed four specific educational needs: knowledge about the SDM process, knowledge about diagnostic and treatment options, communication skills needed for SDM, and skills for applying SDM in challenging situations.

3.2.1.1. Knowledge about the SDM process. Most residents expressed a need to acquire knowledge about the SDM process during communication training sessions on formal training days. The residents appeared to have different levels of knowledge, and they acknowledged the importance of understanding the phases (Q1) and benefits of SDM.

3.2.1.2. Knowledge about diagnostic and treatment options. Medical decision-making is challenging in general practice, given its wide range of reasons for encounters, options and uncertainties. Most residents expressed the need to acquire knowledge about when to apply SDM (Q2) and available options, particularly for common patient complaints. Experiencing uncertainty or a lack of knowledge about diagnostic or treatment options (including wait-and-see) made them feel less competent (Q3). As a result, they discussed fewer options with patients or left decisions to the patient (Q4). Clarity about the diagnosis and sufficient knowledge about the options help residents confidently deliberate with patients (Q5). The residents felt a need to learn about potential options through self-study, medical training and discussing clinical cases with their supervisors, teachers and peers.

3.2.1.3. Communication skills needed for SDM. Most residents felt that current SDM training is insufficient, except for exploring the patient's reason for the encounter and related ideas, concerns and expectations. The residents especially mentioned the need to learn to let patients respond to the presented options and explore patients' preferences (Q6). Table 3 reports the communication skills considered important for education.

3.2.1.4. Skills for applying SDM in challenging situations. Most residents mentioned challenging situations in clinical practice, such as patients leaving the decision to the resident**:** 'you tell me, you're the doctor,' or patients demanding a specific inappropriate diagnostic or treatment option. Table 4 reports the challenging situations that the residents considered important in relation to SDM. They expressed a wish to discuss these situations with their supervisor, peers and teachers, and a wish for concrete examples of how to apply SDM in these situations.

3.2.2. *Practising SDM*

The residents emphasised that repeated practise in the workplace is essential to learning SDM (Q7), because confrontation with real patients and authentic clinical situations support their learning. Some residents make an extra effort to practice SDM when they are being observed or video recorded (Q8). The residents stressed the importance of having concrete examples about how to apply SDM during consultations. These examples could be created by observing supervisors applying SDM in their own practice (Q9), and by observing peers and SDM experts in video-recorded consultations during formal training days. Some residents also mentioned that roleplays with peers or simulated patients can be useful (Q10). Especially helpful examples involve patients and

Table 3
Communication skills that residents consider important for workplace learning of SDM.

Communicate uncertainty about the options when there is no scientific evidence available about probabilities and risks
• Explore the patients' perspective (ideas, concerns and expectations)
• Let patients respond to the presented diagnosis
• Communicate information about the available diagnostic or treatment options in a simple, clear and neutral manner
• Translate general probabilities and risks to individual patients
• Communicate uncertainty about the options when there is no scientific evidence available about probabilities and risks
• Use tools (e.g., patient decision aids, option grids) to support the decision-making process
• Explore the patients' preferences
• Introduce your own preferences on the available options in a neutral manner
• Adapt SDM application to the individual patient, complaint and context of the consultation
• Structure the steps of SDM throughout the consultation
• Integrate SDM into the limited consultation time

Abbreviation: SDM = shared decision-making

Table 4
Challenging situations for which residents want to learn skills for applying SDM in workplace learning.

- Patients who do not present a clear reason for the encounter (and related ideas, concerns and expectations)
- Patients who present more than one complaint
- Patients who are not willing to participate in decision-making
- Patients who present a complaint for which the resident has a personal preferred option
- Patients who experience difficulties in understanding information
- Patients who do not agree with the diagnosis or proposed options
- Patients who demand a specific diagnostic or treatment option
- Patients who immediately agree with one of the resident's suggested options
- Patients who leave decisions to the resident
- Patients who are extremely talkative or very worried
- Patients under the age of 18

Abbreviation: SDM = shared decision-making.

decisions for which SDM is not obvious at first sight. Narratives with illustrative examples of sentences to apply in SDM were also seen as useful (Q11).

Most residents use learning questions to guide their learning process. When specifically targeted at SDM, this triggers practising and fine-tuning SDM during consultations, and stimulates continuous monitoring of their learning process (Q12). When residents face medical uncertainties regarding diagnosis or management options, they often consulted their supervisor during the consultation or in the learning conversation. The residents suggested that it would be helpful if supervisors proposed or actively challenged residents to produce alternative options (Q13). Furthermore, the residents considered clinical guidelines and evidence-based health information websites that list alternative options or include patient decision aids to be particularly useful.

3.2.3. Reflection and feedback

Residents' SDM performance was evaluated by reflection and feedback on consultations, either by self-assessment or with their supervisors during learning conversations, and with teachers and peers during formal communication training. Observations (usually video-recorded consultations) are required for this evaluation. Most residents stressed that confrontation with their own incompetence when watching video-recorded consultations is a strong stimulating factor for learning (Q14). Discussing performance with supervisors, teachers and peers supports reflection and results in specific feedback and directions for future learning (e.g., suggestions for alternative SDM behaviour and example phrases) (Q15). This encourages residents to practise SDM and specify learning goals.

Often, residents expressed that they learned most from reflection and feedback about challenging situations and randomly selected consultations in which there was no focus on applying SDM (Q16). Suggestions from peers or teachers about how to integrate SDM were also considered supportive (Q17). Many residents criticised assessing video recordings using pre-defined checklists with communication skills, as this was not experienced instructive for learning SDM (Q18).

3.2.4. Longitudinal and integrated training

Residents felt that repeated attention on SDM in their training is necessary for effective learning because SDM competence builds gradually. Longitudinal training contributes to continuous awareness of the significance of SDM and repetition and fine-tuning of personal performance. To fit longitudinal SDM training into their overloaded curriculum, some residents mentioned the importance of integrating SDM as a topic in medical and evidence-based medicine training (Q19).

Some residents suggested learning SDM early in GP specialty training because it may be hard to integrate SDM after they have developed their own manner of performing consultations (Q20). Other residents considered basic communication skills training necessary during the first six months of GP specialty training, and thought that SDM training could best start in the seventh month (Q21).

3.2.5. Awareness and motivation for performing SDM

The residents were doubtful on whether SDM was appropriate in every consultation. They stated that a patient's motivation to be involved in a decision seemed to be related to age, intelligence, socio-economic status and culture. A barrier to SDM was patients' not understanding information about their options or being unable to consider the consequences of a decision. The residents said that discussing options with patients with language barriers and low intelligence takes additional time and effort and still rarely resulted in SDM; in such cases residents preferred to take a paternalistic approach (Q22). Furthermore, residents' motivation to reveal the availability of several options to patients appeared to be strongly defined by what they considered the best decision. This resulted mostly from a feeling of responsibility towards the individual patient, society (e.g., healthcare costs) and other health care professionals (e.g., unnecessary referrals) and that they know what is best for their patients (Q23). Most residents mentioned that their own preferences prevented them from objectively presenting alternative options, as they felt that patients should choose the option they preferred (Q24). An exception was made when alternative options were needed to reassure patients or to preserve their relationship with patients (Q25). Most residents found SDM especially relevant to complex decisions that have important consequences for patients, which they believe are mainly made in a hospital setting. However, overall, the residents recognised that decisions in general practice about end-of-life, lifestyle, chronic diseases and psychosomatic complaints are also complex and should therefore be based on patients' preferences (Q26).

Motivation was also influenced by (implicit) feedback from patients: some residents described being discouraged by patients who seem satisfied with the resident's current (paternalistic) approach or respond negatively to attempts to perform SDM (Q27). Most often, the residents became aware of the importance of SDM from role models (e.g., supervisors and teachers) who emphasised this and set an example by involving patients in decisions (Q28) and by prioritising SDM in the curriculum of GP specialty training.

4. Discussion and conclusion

4.1. Discussion

In this study, we explored residents' educational needs regarding SDM in postgraduate medical education to gain insight into how to optimise their engagement during workplace learning. Four educational needs were identified: acquiring knowledge and skills needed to perform SDM; practising SDM; reflection and feedback; and longitudinal and integrated training. We also identified an additional theme 'awareness and motivation for performing SDM'.

4.1.1. Reflection on main findings

The educational needs the residents identified seem to reflect two parallel learning processes: (1) acquiring knowledge and skills needed to perform SDM, and (2) practising SDM in the clinical workplace, embedded in longitudinal training. During both learning processes, raising awareness and motivation for performing SDM seems to be

essential.

The residents perceived acquiring knowledge and skills to be indispensable to translating the concept of SDM into concrete performance in clinical practice. Also, they wanted knowledge about potential clinical situations in which SDM would be applied and knowledge about corresponding diagnostic and treatment options. The importance of developing knowledge and skills in SDM reflects Miller's first two layers – "knows" and "knows how" [39] – and acknowledges the need to free cognitive space for applying SDM in authentic clinical situations [40], reflecting the "does" layer. The SDM learning process can therefore start during formal training sessions, implying that it is important to integrate SDM in the formal educational curriculum. However, residents also emphasised a need for a repeated process of practising, feedback and reflection in the workplace [20,40–43].

Practising SDM connects the educational curriculum and learning during clinical practice (e.g., clinical encounters). The residents perceived supervisors as crucial to this learning process, which resonates with previous findings on the role of supervisors as role models and coaches in workplace learning [44–46]. In this respect, supervisors may support operationalising the "shows how" layer into clinical performance ("does"), by stimulating reflection on residents' perceptions regarding SDM and providing feedback about the application of SDM in residents' clinical encounters and providing examples of potential alternative SDM behaviours. Supervisors need to facilitate a constructive learning environment to coach residents effectively [44,45]. We believe supervisors must possess SDM proficiency and that their beliefs and behaviours in this respect set a good example for residents' learning [44]. Since motivation and positive attitudes are essential for residents' engagement in learning [47], these can be supported by raising awareness of the importance of learning SDM. However, since clinicians also experience challenges in using SDM, supervisors should be supported in improving their own SDM performance [44,48–50]. In addition, supervisors can help residents to become aware that there is a discrepancy between their current and required performance [42,51]. Reflection on residents' performance through feedforward feedback and exploration of their underlying beliefs and gaps in knowledge and skills direct the learning process towards proficient SDM performance [42,52]. Therefore, authentic clinical experiences and the support of supervisors are essential for developing SDM competencies during workplace learning.

The residents reported that developing SDM proficiency requires a longitudinal learning process. This implies a need for continuous attention to and opportunities for a repeated learning process during postgraduate medical education [40,42]. The usual training interventions for SDM focus on acquiring knowledge and skills in stand-alone educational sessions, isolated from the workplace. Since longitudinal workplace learning seems to be essential for developing SDM proficiency, this might explain why most interventions are limited in their effectiveness [9–11,23].

To engage in learning SDM, awareness and motivation seems to be essential [26,27]. Residents doubted on whether SDM was appropriate in every consultation and reported several patient and situation related barriers. We believe residents' awareness of the need for SDM, personal barriers and incompetence needs focus to foster intrinsic motivation to learn SDM. Confrontation with SDM knowledge and skills and reflection on clinical performance, experiences and barriers for SDM might be helpful.

4.1.2. Strengths and limitations

This study has strengths and limitations. First, we used video-stimulated interviews to obtain in-depth reflections on residents' clinical experiences. Using observations from recent exemplary consultations selected by the residents themselves helped us stay close to each resident's learning experiences [30,53]. To quote Barton (2015): '*giving participants greater control can also yield data that more authentically reflect their conceptual categories*' [53]. However, a potential risk of this method is that participants feel vulnerable and change their behaviour. We tried to limit this risk by sitting out of sight and not interacting with the participants while observing [54]. The researchers had less clinical experience than the residents and were not involved in their GP training programme. It was also emphasized that participants were not being assessed [29,30]. Furthermore, some interviews were conducted days after the consultations. We did not observe differences in the extent of reflection, but do not know if the content of the reflection differs for interviews that took place immediately versus up to three weeks after the consultations. Finally, although the used consultations represented a variety of patients, only few patients of low educational levels and no patients over 80 were included. However, all residents reflected on the effects of patients' age, intelligence, language skills, socioeconomic status and culture on SDM.

Second, to maximise the trustworthiness of our findings, we engaged multiple researchers from different backgrounds in the data analysis and interpretation process [55]. We also collected and analysed data iteratively until we reached saturation and a rich understanding of the themes.

Third, the setting in which this study was conducted might have influenced the results. General practice is characterized by generalist care, including a wide range of medical decisions and diagnostic and treatment options. Residents in specialist settings might therefore not feel a comparable need to acquire medical knowledge. Furthermore, residents might have expressed larger engagement with learning SDM compared to residents in other specialties, since SDM is part of GPs' core values. Moreover, in this postgraduate medical education setting there is a strong connection between workplace learning and formal training, and long-term relationships between faculty, clinical supervisors and residents, which might not be the case in different postgraduate programmes. It would be interesting to explore whether residents in other settings recognize the educational needs.

Finally, the sample consisted of first- and third-year residents. Although first-year residents might experience a higher degree of insecurity, which might have influence their needs for learning SDM, no differences in educational needs and challenges faced in workplace learning were found. While 30% of GP residents are male, only 2 of the 17 participating residents were male [56]. Since female clinicians are more likely to engage in patient-centred communication, this might have influenced self-evaluations of SDM performance [57–59]. We acknowledge that not using purposive sampling may have caused selection bias, since residents with a positive attitude and motivation to improve their SDM skills might have been be more likely to participate. However, residents with a more doctor-centred attitude might have volunteered, which could diminish the likelihood of selection bias.

4.2. Conclusion

Residents expressed the need for continuous attention for SDM during postgraduate medical education. This would allow them to engage in two parallel learning processes: acquiring knowledge and skills needed for SDM, and practising SDM in the clinical workplace. It is essential that stakeholders involved in residency training align the educational curriculum, workplace learning and learning activities to operationalise residents' attitude, knowledge and skills for performing SDM in clinical practice.

Table 5
Overview of the identified didactic components for learning SDM during post-graduate medical education, transposed in the triangle of educational curriculum, workplace learning and learning activities.

Educational curriculum (faculty)
Increase the resident's awareness of the need to learn SDM
• Prioritise SDM in the educational curriculum
• Pay continuous attention to SDM during specialty training
• Integrate SDM into existing educational programmes (e.g., medical, EBM and communication training; collaborative reflection; clinical case discussions)
• Communicate the importance of SDM
• Set a good example of SDM
• Reflect on the resident's personal beliefs about SDM
• Confront the resident with their own SDM performance in video recordings
Give the resident theoretical knowledge about SDM
• Integrate the phases of SDM in training
• Integrate knowledge on the benefits of SDM in training
Give the resident knowledge about potential clinical situations for SDM and corresponding diagnostic and treatment options
• Integrate potential situations and options into medical and EBM training and clinical case discussions
Give the resident communication skills to use in SDM
• Provide feedforward feedback on SDM performance in video recordings of the resident and peers during communication training (especially challenging situations and randomly selected consultations)
• Observe video recordings of peers or SDM experts applying SDM
• Provide example narratives with sentences the resident can apply in SDM
• Roleplay with peers or simulated patients
• Discuss challenging situations in peer groups
• Give examples of how to apply SDM in challenging situations
Workplace learning (clinical supervisor)
Increase the resident's awareness of the need to learn SDM
• Devote continuous attention to SDM in the clinical workplace
• Communicate the importance of SDM
• Set a good example of SDM use
• Let the resident observe the supervisor applying SDM
• Confront the resident with their own SDM performance in video recordings
Provide a constructive learning environment
• Provide a safe learning environment
• Provide authentic learning experiences and opportunities to practise new knowledge and skills
Expand the resident's knowledge about potential clinical situations for SDM and corresponding diagnostic and treatment options
• Provide options when discussing clinical cases
• Encourage the resident to think of alternative options when discussing clinical cases
• Discuss potential clinical situations in which SDM can be used
• Discuss options and evidence included in clinical guidelines
Encourage reflection on SDM performance
• Support the resident in becoming aware of their personal beliefs about SDM
• Support reflection on the resident's SDM performance observed in live or video observations
Provide feedback about SDM performance
• Provide feedforward feedback about SDM performance based on live or video observations of the resident
Provide concrete examples and alternative behaviour for SDM
• Let residents observe the supervisor applying SDM
• Provide examples about how to apply SDM during clinical case discussions or observations of the resident
• Provide example narratives with illustrative sentences the resident can apply to SDM during discussions of clinical cases or observations of the resident
Learning activities (resident)
Engage with the educational curriculum and workplace learning of SDM
• Identify potential learning experiences
• Formulate personal learning goals
• Practise SDM knowledge and skills repeatedly
• Identify diagnostic and treatment options
• Evaluate and monitor learning plan and activities
• Assess your own SDM performance by watching video-recorded consultations

Abbreviations: SDM = shared decision-making; EBM = evidence based medicine

4.3. Practice implications

The educational needs for SDM residents expressed contain ingredients for supporting SDM proficiency. Didactic components were outlined based on these educational needs (Table 5). Our findings suggest that clinical supervisors need parallel training to enable supporting residents' development in becoming proficient in SDM. Residents' training should stimulate engagement in learning activities that meet residents' personal educational needs for SDM.

This study focused on understanding residents' perceptions of their educational needs, since we consider this a precondition for effective learning. However, we realize that this reflects a limited perspective on learning SDM given its complexity in clinical practice. Therefore, further applied research should focus on integrating these educational needs with theoretical perspectives and perspectives of faculty and clinical supervisors.

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CRediT authorship contribution statement

Anouk Baghus: Conceptualisation, Data curation, Formal analysis, Investigation, Methodology, Project administration, Validation, Visualisation, Writing – original draft. **Esther Giroldi:** Conceptualisation, Formal analysis, Project administration, Supervision, Validation, Writing – review & editing. **Angelique Timmerman:** Conceptualisation, Funding acquisition, Methodology, Supervision, Validation, Writing – review & editing. **Emmeline Schmitz:** Formal analysis, Investigation, Writing – review & editing. **Fatma Erkan:** Formal analysis, Investigation, Writing – review & editing. **Darwin Röhlinger:** Formal analysis, Investigation, Writing – review & editing. **Arwen Pieterse:** Conceptualisation, Methodology, Writing – review & editing. **Patrick Dielissen:** Resources, Writing – review & editing. **Anneke Kramer:** Resources, Writing – review & editing. **Chris Rietmeijer:** Conceptualisation, Methodology, Resources, Writing – review & editing. **Jean Muris:** Conceptualisation, Funding acquisition, Methodology, Writing – review & editing. **Trudy van der Weijden:** Conceptualisation, Funding acquisition, Methodology, Supervision, Validation, Writing – review & editing. All authors approved the final version of the manuscript.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Definition of 'educational need' in this study on shared decision-making of residents in the specialty of General Practice

Definition of 'educational need' as a twofold concept.

(1) Sub-competences (attitudes, knowledge, skills) SDM residents feel they need to improve or give attention to during GP training, based on their experiences in clinical practice.
(2) Residents views on how these aspects should be learned, in other words: conditions for fostering learning, or the educational support they need to be able to learn SDM.

Appendix B. Interview guide used for video-stimulated interviews with residents in the specialty of General Practice to gain insight into educational needs for shared decision-making

- Introduction* : '*Thank you for participating in this interview*'
- Requesting consent for an audio recording: '*I would like to ask your permission to audio record the interview. Do you agree to this?*'
- Interview procedure: *'The interview will take 45–60 min. We will watch and discuss one or two of your video-recorded consultations. I would like to ask you to pause the video when you feel you used SDM or should have used SDM, and reflect on what you did. You can pause the video by pressing the spacebar. After you have finished your answer, I might ask some additional questions. When I see something interesting or notable, I will pause the video and ask questions about the fragment. Is this clear to you?'*
- Selection of consultation: '*Which consultation would you like to discuss?*'

The researcher looks up the resident's questionnaire regarding this consultation.
'In this consultation, a (fe)male patient of $<x>$ years old visited you because $<x>$. Before we watch the video, I would like to know:

1. *What was your medical goal during this consultation?*
2. *What contextual factors played a part in this consultation?*
3. *In the questionnaire, your SDM relevance score for this consultation was $<x>$. Could you explain this score?*
4. *How would you evaluate SDM in this consultation?'*

- Video-recorded consultations: *'We will now watch the video'*

When pausing the video, say the time of pausing out loud.Pay attention to the patient's preferences, goals and values when watching the video. When the video is paused and the resident has stopped talking, or when you pause the video, ask open-ended questions (how, what, why, when), such as:

1. Can you explain what you are doing in this fragment? Why are you doing this in this way?
2. What is happening in this fragment?
3. Could you tell me more about this?
4. What are you trying to achieve at this moment?
5. What did you intend with this behaviour?
6. Why did you choose to do it in this manner?
7. What resulted from this behaviour, in your opinion?
8. What do you mean exactly?
9. Did you face barriers/difficulties?
10. What would have helped you in applying SDM?
11. What would you need to be able to do this (even) better?
12. How did you learn this?
13. What would you need to learn this?
14. What influence did your supervisor / training on formal training days have on learning this? How can this be improved?

* Please note that the researcher and resident had already met since the researcher was present in general practice during a morning or afternoon clinic. Before the researcher began video recording the consultations during this clinic, the researcher introduced him/herself, and repeated important elements of the information letter (e.g., the purpose and procedure of the study, the voluntary basis of participation and guaranteed anonymity).

Appendix C. Characteristics of the consultations selected for the video-stimulated interviews

The 17 consultations used for the video-stimulated interviews represent a broad variety of patients and reasons for encounter (Table). All selected consultations were non-urgent, and the mean consultation time was 15 min. Seven patients had visited the resident before, six of whom had done so for the same complaint. In all consultations, both the resident and patient scored SDM as relevant (score 4–6 on a 6-point scale).

Characteristics of the consultations selected for the video-stimulated interviews.

Patient	Sex (male/ female)	Age (years)	Educational level	Reason for encounter	Relevance of SDM[a]		Known/ unknown patient	Initial/ follow-up consultation	Duration of consultation (minutes)
					Resident	Patient			
1	f	25	master	breakthrough bleeding on contraception	4	5	unknown	initial	5

(*continued on next page*)

(*continued*)

Patient	Sex (male/ female)	Age (years)	Educational level	Reason for encounter	Relevance of SDM[a]		Known/ unknown patient	Initial/ follow-up consultation	Duration of consultation (minutes)
2	m	72	primary education	cough	4	5	known	follow-up	13
3	m	50	lower secondary education	rectal bleeding	5	6	unknown	initial	27
4	f	1	bachelor	earache (child with mother)	5	4	unknown	initial	10
5	m	74	bachelor	shoulder pain	5	6	unknown	initial	22
6	m	44	bachelor	panic attack	6	6	known	follow-up	19
7	f	75	technical/ vocational	sore throat	4	6	unknown	initial	16
8	m	8	primary education	asthma (child with father)	5	6	known	follow-up	9
9	f	78	technical/ vocational	tailbone pain	4	4	unknown	initial	19
10	m	48	bachelor	insomnia	5	5	unknown	initial	19
11	f	20	higher secondary education	eczema	4	5	unknown	initial	9
12	f	52	technical/ vocational	abdominal pain	4	6	known	follow-up	23
13	f	73	lower secondary education	flank pain	4	5	known	initial	16
14	f	32	bachelor	psoriasis	5	6	known	follow-up	7
15	m	30	technical/ vocational	cough	5	5	known	follow-up	11
16	m	27	technical/ vocational	earache	4	6	unknown	initial	18
17	f	50	bachelor	erysipelas	6	5	unknown	initial	16

Abbreviation: SDM = shared decision-making.

[a] Score on a 6-point scale (completely disagree – completely agree). The resident and patient scored the relevance of an SDM process in the consultation. Residents answered the question: 'how relevant did you rate SDM in this consultation'. Patients answered the question 'for me it is important to be involved in the decision made in this consultation'.

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